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|  | |  |  |  | | --- | --- | --- | |  | **Semester-III - Theory**  **EC-311 SPORTS MEDICINE, PHYSIOTHERAPY AND REHABILITATION (ELECTIVE)**  **Unit-1Sports Medicine** | | |  | Meaning, Definition, and Importance of Sports Medicine. Role of Physical Education Teachers and Coaches in Athletes Care and Rehabilitation. Common sports injuries and their prevention.­ **Treatments:** Laceration, Blisters, Contusion, Strain, Sprain, Fracture, Dislocation and Cramps. **Bandages:** Types of Bandages, Taping and supports.**First Aid**: Definition of First Aid, **DRABC** formula (Danger, Response, Airways, Breathing and Circulation), **Artificial respiration technique**: Mouth to mouth, Mouth to nose respiration, CPR (Cardio Pulmonary Resuscitation). | | | Unit-2 | **Physiotherapy** | | |  | Definition: Guiding principles of physiotherapy, Importance of physiotherapy.  **Treatment Modalities:** Electrotherapy, infrared rays­, Ultraviolet rays, short wave diathermy, ultra sound. | | | Unit-3 | **Hydrotherapy and Massage** | | |  | Hydrotherapy: Meaning and Methods, Cryotherapy, Thermo therapy, Contrast Bath, Whirlpool Bath, Steam Bath, Sauna Bath, Hot Water Fomentation.  **Massage:** Meaning and importance of massage, Indications and contraindications of massage. Types of Manipulation, Physiological effects of Massage. | | | Unit-4 | **Therapeutic Exercise** | | |  | Definition, Principles and Importance of Therapeutic Exercises. Classification of Therapeutic exercise: Passive Movements (Relaxed, Forced and passive stretching). Active movements (concentric, Eccentric and static). Free Mobility Exercise for Shoulder, Wrist, Fingers, Hip, Ankle, Foot joints and Neck exercises. | | | References: | | 1. Christine, M.D., (1999). ***Physiology of sports and Exercise****. USA:* Human Kinetics. 2. Conley, M. (2000). ***Bioenergetics of exercise training****.* In T.R. Baechle, & R.W. Earle, (Eds.), 3. ***Essentials of Strength Training and Conditioning*** (pp. 73-9o). Champaign, IL: Human Kinetics. 4. David, R.M. (2005). ***Drugs in sports****,* (4th Ed). Routledge Taylor and Francis Group. 5. Hunter, M. D. (1979). **A *dictionary for Physical Educators****.* In H. M. Borrow & R. McGee, (Eds.), 6. ***A Practical approach to measurement in Physical Education*** (pp.573-74). Philadelphia: Lea & Febiger. 7. Jeyaprakash, C. S., ***Sports Medicine***, J.P. Brothers Pub., New Delhi, 2oo3. 8. Khanna, G.L., (1990). ***Exercise physiology* & *sports medicine****.* Delhi: Lucky Enterprises. Mathew, D.K. & Fox, 9. E.L, (1971). **Physiological basis of physical education and athletics.**Philadelphia: W.B. Saunders Co. 10. Pandey, P.K. (1987). ***Outline of Sports Medicine****,* New Delhi: J.P. |   **Unit=1 Sports Medicine** |
|  | Meaning, Definition, and Importance of Sports Medicine. Role of Physical Education Teachers and Coaches in Athletes Care and Rehabilitation. Common sports injuries and their prevention.­ **Treatments:** Laceration, Blisters, Contusion, Strain, Sprain, Fracture, Dislocation and Cramps. **Bandages:** Types of Bandages, Taping and supports **First Aid**: Definition of First Aid, DRABCformula (Danger, Response, Airways, Breathing and Circulation), **Artificial respiration technique**: Mouth to mouth, Mouth to nose respiration, CPR (Cardio Pulmonary Resuscitation).. Sports Medicine Sports medicine is an area of medical practice concerned with the treatment of injuries resulting from athletic activities. A physician practicing sports medicine focuses on sports-related medical services. This may include preventative measures such as conditioning and injury prevention, as well as treatments such as [osteopathic manipulation](http://www.spine-health.com/treatment/spine-specialists/osteopathic-manipulative-treatment-omt" \o "Osteopathic Manipulative Treatment (OMT)), rehabilitation, or injections. Sports medicine physicians will often treat athletes with back pain due to strain and injury placed on the back from various sports including bicycling, weight lifting, running, and golf. Definitions of *sports medicine*  1. A field of medicine that relates to the prevention and treatment of injuries and other health problems that affect people who play sports 2. A field of medicine concerned with the prevention and treatment of injuries and disorders that are related to participation in sports 3. Sports medicine (noun) the branch of medicine concerned with the treatment of injuries or illness resulting from athletic activities.   The Sports Medicine specialist and other parties involved in this work may have a substantial impact on all the above points raised including reduction of health care costs. Sports medicine is a multidisciplinary clinical and academic speciality of medicine dealing with health promotion for the general population, by stimulating a physically active lifestyle and diagnosis, treatment, prevention and rehabilitation following injuries or illnesses from participation to physical activities, exercises and sport at all levels. Sports medicine is globally defined and recognised not solely for taking care of the sporting elite athletes. It is mainly focused on:  • Prevention of chronic diseases caused by sedentary lifestyle as a major area of increasing interest which can partially be served by expertise in sports medicine.  • Pre-participation clinical screening and examination before exercise and competition as well as medical assistance to the athletes engaged in all sports.  • The use of supplements, pharmacological agents, doping control and gender verification and its complex moral, legal and health-related difficulties.  • Special medical issues associated with international sporting events of athletes, including disabled athletes, such as the effects of travel and acclimatization.  • Research in basic science and extensive clinical undertaken in the sports medicine domains within agreat variety of specialities.  Sports medicine is a multidisciplinary specialty, integrating teams with physicians, athletic trainers, physical therapists, coaches, sport scientists, nutritionists, psychologists, athletes and other related specialties. Besides his clinical expertise, the sports medicine specialist should be considered as head of the multidisciplinary sports medicine team, coordinating the direct planning of the athlete's health activities, related to his health.  **SPORTS INJURIES** Acute/Sub-Acute/Chronic Stages **Stage 1: The Acute or Inflammatory Stage. (Day 1-3)** Immediately after an injury, inflammation occurs. Inflammation is characterized by pain, swelling, and redness that happen at the injury site. This natural response by the body is its way of protecting the injured part of the body and releasing chemicals that will help with the pain and discomfort. Scar tissue also starts to form at this stage of healing, and **RICE** is highly recommended. **RICE is Rest, Ice, Compress, and Elevation.** Depending on the severity of the injury, gentle movements and/or physical therapy may be beneficial which can aid in pain management and healing.   **An acute injury may include some or all of the following:**   * Inflammation—Redness and swelling * Sudden, severe pain * The inability to weight bear (for example: not being able to step on your foot without pain.) * Decreased mobility or Range of Motion (for example: you suddenly can't lift your arm up as far as you used to.) * Muscle spasm * Extreme weakness * Visible dislocation or break of a bone * Red, black, blue bruising * **Stage 2: The Sub Acute Stage. (Day 4 - 3 Weeks)**  In this stage the body starts to grow more tissues, and starts repairing what was damaged in the first place. Since the tissues are new, you must be very careful not to re- damage them, as this could result in even more pain than the original trauma. Mild exercises when done right can help to strengthen the damaged area.  **An injury in the Sub Acute Stage may include some of all of the following:** * Fragile scar tissue forming (Your body is regenerating and developing new tissue) * Yellow, green or brown bruising * Range of motion increases * Inflammation decreases   **Stage 3: The Chronic Stage (3 Weeks –Weeks, Months or Years)**  The area that sustained injury is now well into healing and scar tissue has now been modified by the body. By this point, people usually will not feel any more pain, except when overuse or the joint reaches its full range of motion. Exercise, physical therapy, and lots of joint movement are recommended.  **Chronic injuries may include some or all of the following:**     * Pain with movement is dull or achy, not sharp. * Pain at the very end of a range of movement. * Dull ache at rest * Bruising is gone * Signs of inflammation are gone * Scar tissue is maturing   **COMMON SPORTS INJURIES**  **SOSFT TISSUE INJURIES**  Most common injuries in sports are of soft tissues. Injuries to soft tissues such as muscles, tendons and ligaments occur from a variety of causes and the effects of injury vary because people are different. The matter is complicated if those affected participate in sport and more so, if it plays an important part in their lives. Some of the soft tissue injuries are as follows.  **Abrasion**   |  |  | | --- | --- | | [Abrasion on the palm of a right hand, shortly after falling](http://en.wikipedia.org/wiki/Image:Abrasion_on_hand_20050906.jpg) | [Abrasions on elbow and lower arm. The elbow wound will produce a permanent scar.](http://en.wikipedia.org/wiki/Image:Wound_abrasion_arm.jpg) |   **Abrasion to the palm Abrasion to the Elbow producing a**  **permanent Scar**  **Abrasion** is superficial damage to the [skin](http://en.wikipedia.org/wiki/Skin" \o "Skin), generally not deeper than the [epidermis](http://en.wikipedia.org/wiki/Epidermis_%28skin%29" \o "Epidermis (skin)). It is more superficial than an [excoriation](http://en.wikipedia.org/wiki/Excoriation" \o "Excoriation), although it can give mild bleeding. Mild abrasions, also known as 'grazes' do not [scar](http://en.wikipedia.org/wiki/Scar" \o "Scar), but deep abrasions may lead to the development of scarring tissue.  Most commonly, abrasion injuries occur when exposed skin comes into moving contact with a rough surface causing trauma to the upper layers of the epidermis. Such [injuries](http://en.wikipedia.org/wiki/Injury" \o "Injury), where caused by abrasive contact with textiles or [carpet](http://en.wikipedia.org/wiki/Carpet" \o "Carpet), are sometimes referred to as '**rug burn'** or '**carpet burn'**.  **Treatment for Abrasions**  Conventional treatment of abrasions and road rash included treating the area by cleaning the wound with mild soap and water or a mild antiseptic wash like hydrogen peroxide, and then covering the area with an antibiotic ointment and a dry dressing. However, it has been found that the use of antiseptics such as hydrogen peroxide may actually cause harm to the tissue and interfere with the healing process.  **Laceration**  **What is a laceration?** A laceration (las-e-RAY-shun) is an injury to the skin and the soft tissue underneath it. Lacerations may happen if you are cut or hit by something. Lacerations can happen anywhere on the body. The healing time for a laceration depends on where it is on your body. It may take a laceration longer to heal if it is over a joint, such as your knee or elbow.   |  |  |  | | --- | --- | --- | | laceration-30 | laceration-32 | laceration-33 |   **How will my injury be treated?**   * **General care:** Caregivers will first work to control the bleeding if your wound is bleeding a lot. You may need your wound cleaned out with germ-free liquid. This helps to remove dirt and other small objects, and decreases the chance of infection. Your caregiver may need to look in the wound for foreign objects. You may need to have your skin numbed with medicine if your caregiver needs to explore (probe) or close the wound. This numbing medicine may help the pain decrease or go away. Tell your caregiver if you are allergic to lidocaine, or to any other dental or numbing medicine. Also tell your caregiver if you are allergic to iodine or latex (rubber).   **Blisters**  The constant rubbing of soft skin can cause a blister. What is occurring is a separation of the outer layer of skin (the epidermis) from the next layer (the dermis) , with fluid accumulating between the layers. To prevent blisters, apply tincture of benzoin followed by talcum powder to protect the skin, or wear something soft between the skin and what it will rub against (for example, two pair of athletic socks on the feet or gloves on the hands).   |  |  |  | | --- | --- | --- | | sunburn-blisters-4 | th?id=OIP | hand-foot-mouth |   Once the blister occurs, cut out a donut-shaped bandage to separate the blister from anything it might rub against. Some people recommend puncturing the blister to drain the fluid. However, puncturing introduces the possibility of infection and should be done only to prevent tearing of the blister. When puncturing a blister is necessary, use a sterile needle applied to one edge of the blister and apply a pressure bandage to prevent refilling of fluid. The application of an antiseptic to the blister prior to securing the pressure bandage is recommended.    **Muscle Contusion (Bruise)**  Athletes in all contact sports have many opportunities to get a muscle contusion (bruise). Contusions are second only to strains as a leading cause of sports injuries.    Most contusions are minor and heal quickly, without taking the athlete needing to be removed from the game. But, severe contusions can cause deep tissue damage and can lead to complications and/or keep the athlete out of sports for months.  **Treatment**  Contusions cause swelling and pain and limit joint range of motion near the injury. Torn blood vessels may cause bluish discoloration. The injured muscle may feel weak and stiff.  To control pain, bleeding, and inflammation, keep the muscle in a gentle stretch position and use the RICE formula:   * **R**est: Protect the injured area from further harm by stopping play. You may also use a protective device (i.e., crutches, sling). * **I**ce: Apply ice wrapped in a clean cloth. (Remove ice after 20 minutes.) * **C**ompression: Lightly wrap the injured area in a soft bandage or ace wrap. * **E**levation: Raise it to a level above the heart.   **Jock Itch**   |  |  |  | | --- | --- | --- | | jock-itch-pictures | jock+itch+image | Jock-itch1-360x200 |   The red, flaky rash that develops on the inner skin of the upper thighs is usually the result of a fungus infection irritated by warm weather, excessive perspiration, or wearing wet underclothes. “Jockitch” can be quite uncomfortable. Several measures can be taken to prevent this condition: drying well after bathing; wearing loose, clean, dry clothing; and the liberal use of talcum power (Vinger and Hoerner, 1981,p.195). Once jock itch occurs, an antifungal cream should be applied to kill the fungus. Tolnaftate is the cream recommended by several experts.  **Strain**  This is about an injury of a muscle. A strain is an [injury](https://en.wikipedia.org/wiki/Injury" \o "Injury) to a [muscle](https://en.wikipedia.org/wiki/Muscle" \o "Muscle) in which the [muscle fibers](https://en.wikipedia.org/wiki/Skeletal_muscle" \o "Skeletal muscle) tear as a result of [overstretching](https://en.wikipedia.org/wiki/Stretching" \o "Stretching). A strain is also colloquially known as a pulled muscle or torn muscle. The equivalent injury to a [ligament](https://en.wikipedia.org/wiki/Ligament" \o "Ligament) is a [sprain](https://en.wikipedia.org/wiki/Sprain" \o "Sprain).  **Treatment**  The first-line treatment for a muscular strain in the [acute phase](https://en.wikipedia.org/wiki/Acute_phase" \o "Acute phase) include five steps commonly known as [P.R.I.C.E.](https://en.wikipedia.org/wiki/P.R.I.C.E." \o "P.R.I.C.E.)  This immediate treatment is usually accompanied by the use of [nonsteroidal anti-inflammatory drugs](https://en.wikipedia.org/wiki/Nonsteroidal_anti-inflammatory_drugs" \o "Nonsteroidal anti-inflammatory drugs)(e.g., [ibuprofen](https://en.wikipedia.org/wiki/Ibuprofen" \o "Ibuprofen)), which both reduce the immediate inflammation and relieve pain. However, NSAIDs, including aspirin and ibuprofen, affect platelet function (this is why they are known as "blood thinners") and should not be taken during the period when tissue is bleeding because they will tend to increase blood flow, inhibit clotting, and thereby increase bleeding and swelling. After the bleeding has stopped, NSAIDs can be used with some effectiveness to reduce inflammation and pain.  It is recommendedthat the person injured should consult a medical provider if the injury is accompanied by severe pain, if the limb cannot be used, or if there is noticeable tenderness over an isolated spot. These can be signs of a broken or [fractured bone](https://en.wikipedia.org/wiki/Bone_fracture" \o "Bone fracture), a [sprain](https://en.wikipedia.org/wiki/Sprain" \o "Sprain), or a complete muscle tear.    **Sprain:**  Sprains and strains are common injuries that share similar signs and symptoms, but involve different parts of your body.  A sprain is a stretching or tearing of ligaments — the tough bands of fibrous tissue that connect two bones together in your joints. The most common location for a sprain is in your ankle.  A strain is a stretching or tearing of muscle or tendon. A tendon is a fibrous cord of tissue that connects muscles to bones. Strains often occur in the lower back and in the hamstring muscle in the back of your thigh.  **Treatment**  Initial treatment for both sprains and strains includes rest, ice, compression and elevation. Mild sprains and strains can be successfully treated at home. Severe sprains and strains sometimes require surgery to repair torn ligaments, muscles or tendons.  **FRACTURES**  **What is a fracture?**  A fracture is a partial or complete break in the bone. When a fracture occurs, it is classified as either open or closed:   * **open fracture (Also called compound fracture.)** - the bone exits and is visible through the skin, or a deep wound that exposes the bone through the skin. * **closed fracture (Also called simple fracture.)** - the bone is broken, but the skin is intact.  What causes a fracture? When outside forces are applied to bone it has the potential to fail. Fractures occur when bone cannot withstand those outside forces. Fracture, break, or crack all mean the same thing. One term is not better or worse than another. The integrity of the bone has been lost and the bone structure fails.  Broken bones hurt for a variety of reasons including:   * The nerve endings that surround bones contain pain fibers and these fibers become irritated when the bone is broken or bruised. * Broken bones bleed, and the blood and associated swelling (edema) causes pain. * Muscles that surround the injured area may go into spasm when they try to hold the broken bone fragments in place, and these spasms cause further pain.   Fractures can occur because of direct blows, twisting injuries, or falls. The type of forces on the bone may determine what type of injury that occurs. Descriptions of fractures can be confusing. They are based on:   * where in the bone the break has occurred, * how the bone fragments are aligned, and * whether any complications exist.   The first step in describing a fracture is whether it is **open or closed**. If the skin over the break is disrupted, then an open fracture exists. The skin can be cut, torn, or abraded (scraped), but if the skin's integrity is damaged, the potential for an infection to get into the bone exists. Since the fracture site in the bone communicates with the outside world, these injuries need to be cleaned out aggressively and many times require anesthesia in the operating room to do the job effectively.  Next, there needs to be a description of the fracture line. Does the fracture line go across the bone (**transverse**), at an angle (**oblique**) or does it **spiral**? Is the fracture in two pieces or is it **comminuted**, in multiple pieces?  **Types of Fractures**  Fractures have a variety of names. Below is a listing of the common types that may occur in children:   * **Greenstick** - incomplete fracture. The broken bone is not completely separated.   Illustration of greenstick fracture   * **Transverse** - the break is in a straight line across the bone.   Illustration of transverse fracture   * **Spiral** - the break spirals around the bone; common in a twisting injury.   Illustration of spiral fracture   * **Oblique** - diagonal break across the bone.     Illustration of oblique fracture  **Compression Fracture** - the bone is crushed, causing the broken bone to be wider or flatter in appearance.  [Illustration of a compression fracture](http://www.healthsystem.virginia.edu/uvahealth/peds_orthopaedics/fracture.cfm)  **Comminuted** **Fracture-** the break is in three or more pieces.  **Treatment for a fracture:**  Specific treatment for a fracture will be determined by your child's physician based on:   * your child's age, overall health, and medical history * extent of the fracture * your child's tolerance for specific medications, procedures, or therapies * expectations for the course of the fracture * your opinion or preference   The goal of treatment is to control the pain, promote healing, prevent complications, and restore normal use of the fractured area.  An open fracture (one in which the bone exits and is visible through the skin, or where a deep wound exposes the bone through the skin) is considered an emergency. Seek immediate medical attention for this type of fracture by calling 911.  Treatment may include:   * **splint/cast** - immobilizes the injured area to promote bone alignment and healing to protect the injured area from motion or use. * **medication** (for pain control) * **traction** - the application of a force to stretch certain parts of the body in a specific direction. Traction consists or pulleys, strings, weights, and a metal frame attached over or on the bed. The purpose of traction is to stretch the muscles and tendons around the broken bone to allow the bone ends to align and heal. * **surgery** - required to put certain types of broken bones back into place. Occasionally, internal fixation (metal rods or pins located inside the bone) or external fixation devices (metal rods or pins located outside of the body) are used to hold the bone fragments in place to allow alignment and healing.   FIRST AID  INTRODUCTION:  Physical education and sports activities demand sufficient knowledge of first aid since participation in sports involves variety of movements which sometimes lead to variety of injuries. Enter in the play field, gymnasium, and swimming pool different kinds of surfaces so must have the knowledge of fundamental principles of first aid.  Injury in sports may be as small as minor scratch on the body and as serious as may be danger to the life, needing prompt first aid.  First aid needs to be immediate in sever accidents complicated by bleeding, shock and loss of consciousness.  Meaning and Definition:  The term ‘First aid’ was adopted officially in England for the first time in 1879 by the St. John ambulance association.  First aid is a combination of simple but quite effective and active measures to prevent possible complications.  First aid means the treatment given to the casualty till proper medical aid comes.  First aid is the immediate and temporary care given to the victim of an accident or sudden illness.  Purpose of first aid till the medical aid is given by the competent and qualified medical personnel.  Purpose of first aid is to preserve life, assistant recovery and prevent aggravation of the condition, until the services of a doctor can be obtained, or during transport to the hospital or to the causality home.  TYPES OF FIRST AID:  There are two types of first aid 1) self aid 2) first aid.   1. Self-aid: Injured person (causality) can do for himself, in many cases the first form help is provided by the affected person himself. Stopping bleeding, supporting injured parts, covering the wounds, other for help and reaching the near by health center for emergency treatment if possible. 2. First aid: Other people can o for the causality when he/she is unconscious or unable to move, there help provided to the causality is known as first aid.   FIRST AID BOX: Small handy kit box   1. Sterile gauge pieces. 2. Bandages of different sizes. 3. Adhesive plasters of different sizes. 4. Scissors, safety pins, needles. 5. Pads of various sizes. 6. Splints. 7. Antiseptic lotion: dettol, spirit, tincher. 8. Silver sulfa diazine cream. 9. Drug- analgesics, antibiotic.   PRINCIPLES OF FIRST AID:   1. Do first things first quickly, quietly and without panic. 2. Guard against or treat for shock by moving the casualty as little as possible and handling him gently. 3. Do not attempt too much. 4. Reassure the casuality and those around in order to reduce tension. 5. Give artificial respiration if breathing has stopped. 6. Stop any bleeding. 7. Do not allow people to crowd around, as fresh air is essential. 8. Do not remove clothes un necessarily. 9. Arrange for the removal of casuality to care of a doctor or hospital as soon as possible.   FUNCTIONS OF FIRST AID:   1. General conditions of the patient. 2. Pulse of the patient. 3. Respiration. 4. Color of tongue, lips, conjunctiva (eyes) and nails. 5. Bleeding. 6. Burns. 7. Fracture of bone or dislocation. 8. Polishing.  **DRABC essential first aid action** This is the first procedure a first aider does before treating a casualty.  DRABC stands for the following:  **D check for Danger**   To you   * To others * To casualty   In every emergency situation, it is important to see if there are any conditions that may be an immediate threat to life. It is most important to make sure the area is safe for both the casualty and yourself. You are no help to the casualty if you become a casualty yourself. Once you have made sure the area is safe, you can go ahead with assessing the casualty.  **R check Response**   Is the casualty conscious?   * Is the casualty unconscious?   No response indicates that the casualty is unconscious and it is important to get help as quickly as possible as this is a life-threatening condition.  If the casualty is CONSCIOUS:   * Ask the casualty’s name * Gently shake the casualty’s shoulder   OR   * Ask the casualty to squeeze your hands (both sides should be tried if a stroke is suspected)   If a response indicates that the casualty is conscious and can be left in the position in which you found them (provided there is no further danger). Then follow the steps below.   * Manage any life-threatening injuries that need immediate attention * Manage other injuries (if left unattended, these may become life-threatening) * Get help if injuries require it * Calm the casualty   If the casualty is UNCONSCIOUS   * Shout for help or send someone for help * Consider going to get help yourself if you are alone, but only if the casualty is in the recovery position and the airway is clear.    A check for Airway    * Is airway clear of objects? * Is airway open?   It is essential to the casualty’s chance of survival to ensure that the airway is clear so that breathing is possible. Turn the casualty onto side, into the recovery position, ensure the neck is well supported if a neck or spine injury is suspected.  To clean the airways follow these steps:   * Open the mouth and clean any foreign objects with your fingers. Only remove dentures if they are loose or broken * Tilt the head back gently and slightly down   Obstruction of the airway may be caused by:   * The tongue * Solid or semi-solid material such as food, vomit, blood or a foreign body * Laryngeal spasm * Swelling or injury of the airway   If the casualty has an open airway:   * Place your hand high on the casualty’s forehead * Support the chin with your other hand * Gently tilt the head backwards, to bring tongue away from back of throat * Lift the jaw forward and open the casualty mouth slightly   With an unconscious casualty, ensuring the airway is open takes precedence over any other injury. However, it is important to handle the casualty gently with minimum of movement.   B check for Breathing    * Is chest rising and falling? * Can you hear breathing? * Can you feel breath on your cheek?   If the casualty is breathing follow these steps:   * Leave the casualty in the recovery position * Check regularly for continued breathing   If the casualty is NOT breathing:   * Send for help – use a bystander * Turn the casualty onto back * Start Expired Air Resuscitation (EAR)    C check for Circulation    * Can you feel a pulse? * Can you see any obvious signs of life?   To assess for signs of circulation follow these steps:   * Check if carotid (neck) pulse is present * Look for any movement, including swallowing or breathing * Observe colour of skin on face   Take no more than 10 seconds to do this.  How to check for a pulse  To feel for pulse:   * Use the pads of your fingers (NOT the thumb or fingertips) * To find carotid pulse place your fingers in the groove on either side of the windpipe (neck), but not on both sides at the same time OR The radial pulse can be felt at the wrist   If there are signs of circulation:   * Continue Expired Air Resuscitation (EAR) at 1 breath every 4 seconds (15 breaths per minute) * Recheck for signs of circulation about every minute * If casualty starts to breathe sufficiently on own, turn onto side into the recovery position * Check the casualty’s condition and be ready to turn onto back and restart EAR if breathing stops   **Artificial Respiration**  The first step in CPR is to give artificial respiration. Artificial respiration is a lifesaving method used to restore breathing to a person whose breathing has stopped. If breathing has stopped, the victim will soon become unconscious. There will be no chest movement, and the skin will be pale or a slightly bluish colour. When breathing stops there is no oxygenation of the blood and irreversible brain damage or death may occur in as little as three to six minutes. Therefore it is important to start artificial respiration as soon as possible and continue until medical help arrives. If breathing restarts and becomes regular, the victim should be observed continuously until medical help arrives.  The most common and efficient method of artificial respiration is mouth-to-mouth resuscitation.   **Mouth-to-Mouth Resuscitation**   * Mouth-to-Mouth Resuscitation: Place one hand on the victim's forehead to pinch the victim's nose closed. Ensure that your breathing is regular. Take a deep breath and place your mouth tightly over the victim's mouth. If you wish you may place a thin handkerchief between your mouth and the victim's mouth. However, do not use a very thick cloth, as it may be difficult to blow through it. Blow until the victim's chest rises. Listen for air being passively exhaled. Repeat with breaths at the rate of 12 times per minute. Children should receive smaller breaths repeated at the rate of 20 times per minute.   **MOUTH TO NOSE** Mouth-to-nose ventilation is effective when the victim has extensive facial or dental injuries or is very young. Mouth-to-nose ventilation creates an effective air seal. To administer this mouth-to-nose ventilation—1.  Place  the  heel  of  one  hand  on  the  victim’s forehead and use the other hand to lift the jaw.2.  After  sealing  the  victim’s  lips,  take  a  deep breath, place your lips over the victim’s nose, and blow. Observe the chest for movement and place your earnext  to  the  victim’s  nose  to  listen  for  or  feel  airexchange. Again, you must continue your efforts at therate of 12 to 15 ventilations per minute, or one breathevery 5 seconds, until the victim can breathe withoutassistance.Sometimes during artificial ventilation air entersthe stomach instead of the lungs. This condition iscalled *gastric distention*. It can be relieved by moderatepressure exerted with a flat hand between the navel andthe rib cage. Before applying pressure, turn the victim’shead to the side to prevent choking on the stomachcontents that are often brought up during the process. Bandaging Covering a break in the skin helps to control bleeding and protect against infection. **Dressings** are pads of gauze or cloth that can be placed directly against the wound to absorb blood and other fluids. Cloth **bandages** cover dressings and hold them in place.  Image of doctor holding gauze pad against patient's forearm 1. Dress the Wound  * Put on gloves or use other protection to avoid contact with the victim's blood. * Clean the wound with mild soap and water. * Place a clean dressing over the entire wound. Gauze dressings let in air for faster healing. Nonstick dressings have a special surface that won't cling to the wound. * If blood soaks through the dressing, place another dressing over the first one.   Image of doctor wrapping patient arm with bandage 2. Cover the Bandage  * Wrap roller gauze or cloth strips over the dressing and around the wound several times. * Extend the bandage at least an inch beyond both sides of the dressing. * **Don't** wrap the bandage so tight that it interferes with blood flow to healthy tissue.   Image of doctor securing bandage in place 3. Secure the Bandage  * Tie or tape the bandage in place. * **Don't** secure the bandage so tight that fingers or toes become pale or blue.   Image of doctor checking circulation in patient 4. Check Circulation  * Check circulation in the area below the bandage after several minutes and again after several hours. The skin may look pale or blue or feel cold. Signs of poor circulation also include numbness and tingling. * If circulation is reduced, loosen the bandage immediately. If symptoms continue, seek medical attention.   **Types of bandages**  **Gauze bandage (common gauze roller bandage)**  The most common type of bandage is the gauze bandage, a simple woven strip of material, or a woven strip of material with a Telfa absorbent barrier to prevent adhering to wounds. A gauze bandage can come in any number of widths and lengths, and can be used for almost any bandage application, including holding a dressing in place.  th?id=OIP  **Compression bandage**  The term 'compression bandage' describes a wide variety of bandages with many different applications.  [https://upload.wikimedia.org/wikipedia/commons/thumb/6/65/Bandagedknuckles.jpg/220px-Bandagedknuckles.jpg](https://en.wikipedia.org/wiki/File:Bandagedknuckles.jpg)  Short stretch compression bandages are good for protecting wounds on one's hands, especially on one's fingers.  **Short stretch compression bandages:** Theses type of bandage are capable of shortening around the limb after application and is therefore not exerting ever-increasing pressure during inactivity. This dynamic is called resting pressure and is considered safe and comfortable for long-term treatment.   |  |  | | --- | --- | | bsn-medical-comprilan-short-stretch-compression-bandage-3-8-10cm-x-5m-model-1028-case-of-20 | rosidal-k_large |   Conversely, the stability of the bandage creates a very high resistance to stretch when pressure is applied through internal muscle contraction and joint movement. This force is called working pressure.  **Long stretch compression bandages** have long stretch properties, meaning their high compressive power can be easily adjusted. However, they also have a very high resting pressure and must be removed at night or if the patient is in a resting position.   |  |  | | --- | --- | | th?id=OIP | Adva-co |   **Triangular bandage**  Also known as a cravat bandage, a triangular bandage is a piece of cloth put into a right-angled triangle, and often provided with safety pins to secure it in place. It can be used fully unrolled as a sling, folded as a normal bandage, or for specialized applications, as on the head.   |  |  | | --- | --- | | th?id=OIP | th?id=OIP |   One advantage of this type of bandage is that it can be makeshift and made from a fabric scrap or a piece of clothing. The Boy Scouts popularized use of this bandage in many of their first aid lessons, as a part of the uniform is a "neckerchief" that can easily be folded to form a cravat.  **Tube bandage**  A tube bandage is applied using an applicator, and is woven in a continuous circle. It is used to hold dressings or splints on to limbs, or to provide support to sprains and strains, so that it stops bleed   |  |  | | --- | --- | | th?id=OIP | 2412X_TGGRIPINUSE |   **Strapping and Taping**  Strapping and taping is used mainly in sporting scenarios and generally used for injuries and, in this case, applied alongside [Sports Massage](http://www.massage-southampton.co.uk/sports-massage.html" \t "_blank" \o "Sports Massage Southampton).  This is where adhesive bandages or tape (depending on the area) are used to secure or stabilise an injured or painful joint. You will often see people involved in sports wearing some sort of tape when they have an injury such as an ankle sprain or knee injury.  The tape will prevent the joint from moving into the position that causes pain without restricting the joint from moving in other directions. This way mobility isn’t impaired but pain will be prevented so the person can continue with their activity if needed.   |  | | --- | | **Supportive Taping & Strapping** |  |  | | --- | | **ankle strapping** | |
|  | **Unit-2 Physiotherapy**  Definition: Guiding principles of physiotherapy, Importance of physiotherapy.  **Treatment Modalities:** Electrotherapy, infrared rays­, Ultraviolet rays, short wave diathermy, ultra sound.  **Physiotherapy**  The physiotherapy treatment of disease, injury, or deformity by physical methods such as massage, heat treatment, and exercise rather than by drugs or surgery.  Physiotherapists help people affected by injury, illness or disability through movement and exercise, manual therapy, education and advice. They maintain health for people of all ages, helping patients to manage pain and prevent disease. The profession helps to encourage development and facilitate recovery, enabling people to stay in work while helping them to remain independent for as long as possible. Guiding Principles of physiotherapy The toolkit will provide you with key resources to transfer the concepts to your unique setting.  Along the way, you will be prompted to analyze your setting and particular needs. We will share with you 8 guiding principles that will help keep you on the right track.   1. First things First - Seek support from your organization 2. Follow a Framework 3. Recruit a Team 4. Invest the Time 5. Establish the Hook 6. Turn Barriers into Facilitators 7. Don't Go Too Big Too Soon 8. Expect Politics   **Importance of physiotherapy**  Physiotherapy is the most commonly prescribed treatment to assist in the recovery of many injuries and conditions. Chronic pain, car and sports injuries and challenges with mobility can all be greatly improved with the use of physiotherapy. Here are just a few reasons why sticking to your physiotherapy is so important: Range of Motion If you have suffered from an injury or have a condition that is affecting your range of motion, without physiotherapy you will continue to feel less and less capable of participating in your day to day activities. Stiffness and pain in your shoulder, for example, can lead to a case of frozen shoulder if you do not follow your physiotherapy plan. In Ottawa, physiotherapy patients with range of motion issues will regain their mobility and be able to return to their usual level of activity and better care for themselves. Exercise Your physiotherapist will assign a number of therapeutic exercises for you to practice at home between appointments. Many people think that once they are shown how to do the exercises they no longer require assistance from their physiotherapists. However, during your Ottawa physiotherapy appointments, your physiotherapist will first check your improvement and then can increase or change your exercises accordingly to match your progress. Sometimes they will reduce your exercises if you seem to be having difficulty. Without regular appointments chances are you will not be able to progress to complete recovery and could even make matters worse. Neurological Disorders For patients who have suffered a stroke or have conditions such as Parkinson’s Disease, physiotherapy plays a key role in aiding with correcting or improving the damage. Your treatments at an Ottawa physiotherapy clinic will help to compensate for deficits in gait, mobility and weaknesses, to bring back full or partial function, and to stop further deterioration from taking place. Cardiopulmonary Conditions If you suffer from breathing issues that are interfering with your day to day life, Ottawa physiotherapy patients have seen great improvements following guided exercises, in hand with exercises with a physiotherapist. Cardiac patients also receive instruction on basic movement to regain their confidence after surgery. Pain Management In any number of cases for both chronic pain or pain resulting from an accident or injury, physiotherapy will aid in pain management improving your quality of life so you can resume your daily activities, sports, and hobbies.  In Ottawa, physiotherapy plays an important role for a number of treatment programs and when disregarded can stop you from regaining your strength and health.  **Treatment Modalities** [Electrotherapy in Physiotherapy Treatments](http://www.thephysiocompany.com/blog/electrotherapy-in-physiotherapy-treatments)Background to Electrotherapy Ever get caught out by the electric fence as a child?  You may recall the sensation of that sudden shock or maybe the feeling after of pins and needles?….well scale it down somewhat and it’s not completely dissimilar to a type of treatment available at The Physio Company in managing pain and promoting tissue healing, and believe it or not, it has been around quite some time…  https://static1.squarespace.com/static/537b0649e4b0f6c6b6877a35/t/53a307a1e4b0097de331e56f/1403193249831/?format=500w  Electrical stimulation for pain control was used in ancient Rome, 63 A.D. It was reported by Scribonius Largus that pain was relieved by standing on an electrical fish at the seashore. From the 16th to 18th centuries various electrostatic devices were used for headaches and other pains, even Benjamin Franklin was a supporter of this method for pain relief.  Electrotherapy uses electrical signals to interfere with the transmission of neural pain signals into the brain. It effectively slows down or distracts the message from the nerve to the brain. From a physiotherapy point of view, affecting one’s ‘Pain Gate’, whether in an acute or chronic pain episode, is crucial area of treatment and electrotherapy is a very useful resource where conventional medicines are not as affective. Electrotherapy can also involve the use of this electric current to speed tissue healing where tissue damage has also occurred.  I’m going to discuss two different forms of it today, TENS (transcutaneous electrical nerve stimulation) and Interferential therapy. Transcutaneous Electrical Nerve Stimulation (TENS) TENS is widely used around the world for a variety of painful conditions such as;   * Arthritis * Low back pain * Labour pain * Nerve related pain such as phantom pain  How Does It Work? A small electrical device (think back to the days of the Walkman!) delivers electrical impulses across the skin.  Lightweight versions not much bigger than a credit card are available these days. This can be clipped to your jeans or placed in your pocket.  The device is connected by wires to sticky pad electrodes, which are placed on the skin in the area of the pain. This allows a small, low-intensity electric charge to be passed across the area. TENS Can Work In Two Ways: 1/ On a high frequency, by selectively stimulating certain ‘non-pain’ nerve fibres to send signals to the brain that block other nerve signals carrying pain messages. High frequency stimulation, sometimes called “conventional”, is tolerable for hours, but the resultant pain relief lasts for a shorter period of time.  2/ Lower frequencies stimulate the production of endorphins, natural pain-relieving hormones – your own built-in pain management system.  Low-frequency stimulation, sometimes called “acupuncture-like”, is more uncomfortable and tolerable for around 20-30 minutes, but the resultant pain relief lasts longer.  Unlike many pain-relieving drugs, TENS isn’t addictive and has few side-effects. Most people can use a TENS machine but it is unsuitable for:  -Epileptics. -Patients with pacemakers and certain other types of heart disease. -Unknowncausesofpain. -Certain body sites in pregnancy (other than in labour) -Certain skin conditions  TENS users should experiment with various electrode placements. Electrodes can be placed over the painful area, surrounding the painful area, over the nerve supplying the painful area, or even on the opposite side of the body. TENS users need to try the unit for several days with several electrode placements prior to deciding if it will be useful. A home trial for several days to weeks is preferable. Interferential Therapy Here at The Physio Company we also use an electrotherapy modality called interferential therapy (IFT). It is essentially a deeper form of TENS.  It utilises two high frequency currents which are slightly out of phase, and are passed through the skin at the same time where they are set up so that their paths cross and simply interfere with each other. This interference gives way to a beat frequency which has the characteristics of low frequency stimulation deep under the skin.  It is administered by a physiotherapist and  involves the placement of damp sponges on the body which deliver a mild current similar to the sensation of pins and needles. Manipulation of the current allows the physiotherapist to target the correct structure and to treat.  There are 4 main clinical applications for which IFT has been found to be effective:   * Pain relief (in a similar fashion to TENS) * Muscle stimulation – prevent muscle wastage, re-education, maintain range of motion * Increased local blood flow * Reduction of oedema  Stimulating Soft Tissue Healing & Repair In acute conditions, shorter treatment times of 5-10 minutes may be sufficient to achieve the effect. In other circumstances, it may be necessary to stimulate the tissues for 20-30 minutes. It is suggested that short treatment times are initially adopted especially with the acute case.  Electrotherapy is used as an adjunct to traditional physiotherapy treatments.  TENS units are available for sale or hire from The Physio Company and our physiotherapists can give guidance on the correct programmes for use dependent on your condition. Many of our physiotherapists will recommend the use of Electrotherapy in the provision of their treatments.  If you would like to [book an appointment](http://www.thephysiocompany.com/need-an-appointment/" \t "_blank), please contact us today! Not all patients will need to get Electrotherapy and this will be advised by the physiotherapist during the initial consultation.  4 Likes  Share  **Infrared radiations**  Infrared rays are electromagnetic waves with wavelength of 750 – 4 lack nanometre. Any hot body emits infrared rays. For example the sun, gas fire, coal fire, electric fire, hot water pipes etc. The infrared rays are produced by two types of generators.   1. Luminous generator 2. Non luminous generator   <http://2.bp.blogspot.com/-DabkArN0fxs/To_4YSXYZrI/AAAAAAAAAeY/J8v43gX7_PQ/s1600/untitled.bmp>  Non luminous generator provides infrared rays only while luminous generator emits visible and a few ultraviolet rays as luminous generator is often called radiant heat. The term infrared is generally being applied to the radiations from non luminous source. *Therapeutic uses of infrared:**A.*  *Pain relief:* Infrared radiation is an effective mean of relieving pain, when heating is mild the relief of pain is due to sedative effect on superficial nerve endings. Stronger heating of infrared stimulate the superficial nerve endings. It has been also noticed that pain is due to accumulation of waste product and because of stronger heating the blood flow increases which remove that waste product and the pain is relieved. In some cases the relief of pain is probably associated with muscle relaxation.    [http://1.bp.blogspot.com/-RcxVnVhcr6w/To_tGLUnwRI/AAAAAAAAAeM/QoPYjmCHYjI/s320/untitled.bmp](http://1.bp.blogspot.com/-RcxVnVhcr6w/To_tGLUnwRI/AAAAAAAAAeM/QoPYjmCHYjI/s1600/untitled.bmp)  In acute inflammation, pain is reduced with mild heating because in recent injury tissue fluid accumulates in that area, the use of stronger heating will increase these processes which cause pain.  In chronic type of inflammation pain is reduced due to stronger heating. The infrared causes comfortable warmth and the treatment time should be round about 30 min. *B.*  *Muscle relaxation:* Muscle relaxes most readily when the tissue is warm. The relief of pain also facilitates muscle relaxation. Infrared radiation is most helpful to achieve muscle relaxation and for the relief of muscle spasm associated with acute injury or inflammation. *C.*  *Increased blood flow/ supply:* The effect of infrared is mainly in the superficial tissues and this may be used in the treatment of superficial wounds and infections. Because a good supply of blood is essential for healing to take place and if there is infection, the increased number of WBCs and the increased exudation of fluid assist in the destroying of bacteria. When superficial joints are affected for example small joints of hand and feet (arthritis), the infrared radiation is more helpful in the vasodilatation of blood vessels. This vasodilatation can increase the blood flow (increased supply of oxygen and removal of waste product and food stuffs are available to bring about the resolution of inflammation). *Application of infrared treatment:* The intensity of radiation should be low at the beginning but after 5 – 10 min when the vasodilatation occur (when the increased blood flow establishes). The strength of radiation may increase; this can be achieved by moving the lamp nearer to the patient. The physiotherapist should be at the hand throughout the treatment session and should reduce the intensity of radiations when the heating become excessive. Sweating is encouraged if the patient is provided with water drink. *Dangers of infrared radiations:*     i.        Burn: Infrared radiations can cause superficial heat burn. Red patches are seen on the skin which subsequently blisters during or after the treatment. The burn is most often caused by 2 grade intensity of radiation. This process can occur when the patient does not understand the nature of treatment or fails to report the overheating or move neat the lamp or falls asleep. The physiotherapist must be at hand during the whole treatment session.    ii.        Electric shock: It can occur as a result of touching some exposed part of the circuit but the main danger arises if the live wire comes in contact with the apparatus casing.   iii.        Gangrene: Gangrene may be occurred when infrared is applied to the area of defective arterial supply.   iv.        Headache: Headache may occur if the sweating does not take place properly or if the treatment is given in hot weather.     v.        Faintness and Giddiness: Extensive irradiation may cause fall in BP which may result in faintness or giddiness due to hypoxia of the brain.   vi.        Injury to the eyes: It has been suggested that exposure to IRR can cause cataract. *Contra – indications:* a)      Defective arterial supply  b)      Defective skin sensation  c)      Areas where there is danger of hemorrhage  **ULTRA – VIOLET RADIATION**  Ultraviolet radiation is electromagnetic energy which is invisible to the human eye, with wavelengths between 100nm and 400nm, Ultraviolet lies between visible light and x-rays in the electromagnetic spectrum and for descriptive purposes therapeutic fact of the ultraviolet spectrum may be divided into UV(A)- 315 – 400nm, UV(B)-280-315nm, UV(C)-below 280nm. The sum emits ultra-violet radiation which can often have an effect on the skin, eg. Sum-burn, but for therapeutic purposes some form of generator is used.  **SHORT–WAVE DIATHERMY**  A short-wave diathermic current has a frequency of between 107 and 108 HZ and sets up wireless waves with a wave length of between 30 and 3m. The use of any current within this range is classed as short-wave diathermy, but that commonly used for medical work has a frequency of 27,120,000 Hz (27.12MHz) and sets up wireless waves with a wave length of 11m. This current is generated in a machine circuit (oscillator), which in turn compiled to a patient(resonator) circuit which is used to treat the patient.  BIONICS_SWD  Short-wave diathermy provides a deepest form of heat than that of any other instrument to the physiotherapist.  **The machine circuit / oscillator circuit**    It is not possible to construct any mechanical device which causes sufficiently rapid movement to produce high frequency current, so this type of current is obtained by discharging a condenser through an inductance of low resistance. The electricity is converted to high frequency electromagnetic waves in this machine circuit.  **The patient circuit / Resonance Circuit:**  The circuit is coupled to the machine circuit by inductors, i.e. a matching high frequency current is produced in the resonator circuit by electromagnetic induction. For this to happen the oscillator and resonator circuits must be in resonance with each other, which requires that the product of inductance and capacitance must be the same for both circuits. (when shore-wave diathermy is applied by the ‘condenser’ field method, the electrodes and patient tissues form a capacitor).  Indications that this is occurring are:   1. An indicator light on the equipment either comes on or changes colour. 2. An ammeter wired into the resonator circuit shows a maximum reading which is diminished by turning the knob controlling the variable condenser either way. 3. A tube containing or small amount of neon gas placed within the electric field between the electrodes or the ends of the cable will glow at maximum intensity when the circuits are in resonance.   Some machines have an automatic turning (resonator) control. This automatically searches for and selects the adjustment of the variable capacitor to ensure maximum power transfer to the patient circuit.  **Physiological effects of diathermy current:**  A high frequency current does not stimulate motor or sensory nerves. It was known that the shorter the duration of impulse generally used. A high frequency current has a frequency of more than 500 KHz. This provides 1 mill. impulses per second, so each has a duration of 0.001ms which is beyond the range used for nerve stimulation.  Thus when such a current is passed through the body there is no discomfort and no muscle contractions are produced. The current is evenly alternating, therefore there is no danger of chemical burns. Consequently it is possible to pass through the tissues currents of a much greater intensity than can be used with low frequency currents.  **ULTRA SOUND TREATMENT**  The upper limit of hearing is just over 20 KHZ (20,000 cycles/sec) Ultra sound is well above this, therapeutic frequencies being in the region of 1 mega cycle or 3MHZ  **The production of Ultrasound waves:-**  For a one mega cycle machine a vibrating source with a frequency of 1 million cycles/sec is needed. This is achieved using either a quartz or barium titanate crystal. These crystals deform when subjected to a vibrating potential difference – ‘a piezo- electric’ effect.  There is a source of high frequency current which is conveyed by a coaxial cable to a transducer circuit or treatment head. Inside the transducer circuit, the high frequency current is applied to the crystal via a link electrode the crystal being fused to the front metal plate of the treatment head. Any change in the shape of the crystal causes a movement of the metal front plate which in turn produces an ultrasound waves.  9527a421cea645758d466c233_large  **Effects of Ultra sound waves on tissues thermal effects:-**  As the ultra sound waves are absorbed, they are converted to thermal energy (heat). The amount of heat produced depends upon factors such as the number of times for second the transducer passes over a part and on the space-averaged intensity(walts/cm) used.  Mechanical Effects:- A mechanical effect is caused by the pressure changes applied to the tissues by the sound waves. Cavitation is a condition in which a bubble of gas is produced in the tissues as a result of ionization. ‘Stable Cavitation’ is not dangerous to the tissues as the bubbles remain intact and oscillate harmlessly in the ultrasonic field. ‘Transient Cavitation’ is dangerous to the tissues, as the bubble grows and collapses rapidly in the ultrasonic beam and this is thought to cause very great increases in temperature. In practice, the danger of tissue damage to Cavitation is minimized by the following measures**.**  1. Using space averaged intensities below 4 watts/cm2  2. Using a pulsed source of ultrasound  3. Moving the treatment head during intonation.  **Unit-3 Hydro Therapy and Massage**  Hydrotherapy: Meaning and Methods, Cryotherapy, Thermo therapy, Contrast Bath, Whirlpool Bath, Steam Bath, Sauna Bath, Hot Water Fomentation.  **Massage:** Meaning and importance of massage, Indications and contraindications of massage. Types of Manipulation, Physiological effects of Massage.  **Cryotherapy**  Cold treatment or treatment with application of cold is known as cryotherapy. The application of cold to the tissues after injury is a practice as old as medicine itself.  In various forms of ice or frozen packs application to tissues there is reduction of local temperature as well as shows many therapeutic benefits.  ronaldochamber  The physiological principle behind the cryotherapy was LEWIS’S hunting reaction.  It suggests initial response of the skin to cooling is an attempt to preserve heat and accomplished by an initial local vasoconstriction. After short periods there follow a vasodilatation in this period arteriovenus anastomosis is closed.  This is beneficial to reduce swelling and tissue damage.  **Techniques of application**   1. Application of Ice towels. 2. Application of Ice packs. 3. Application of Ice cube massage. 4. Whole body immersion in ice 5. Immersion in an Ice solution such as Hands, Feet’s, Elbows or even a whole body.   **Uses**   1. Reduce pain. 2. Reduce muscle spasm. 3. Reduce swelling. 4. Reduce spastically. 5. Promote repair.   **Contraindications**   1. Psychological ill patients. 2. Myocardial infraction patients. 3. Peripheral nerve injuries. 4. Vasospastic disease. 5. Cold sensitivity patients. 6. Peripheral vascular disease patients.   **Thermotherapy**  **Hot pack**  Heating of the tissue is by conduction so that the effect is merely superficial, but this method is both easy and comfortable for the patient.  There are various forms of hot moist pack, which have been used therapeutically.  **Method of application:** A piece of absorbent lint or woolen material soaked in almost boiling water and then wrung out (using gloves) can be applied to the skin when the temperature has fallen to about 60c. Such packs often called Kenny packs.  Electric pads are produced commercially in various sizes. Their constriction is such that the temperature produced by heating element may be regulated by a series of resistors to the required level.  Physiological effects of heat   1. Increased metabolic activity rises in temperature (vasodilatation)↑↓. 2. Increased blood flow. 3. Stimulation of neural receptors in the skin or tissue.   **Theraputic uses**  **1.** Reduction of pain.   1. Reduction of chronic Inflammation. 2. Reduction of Haematoma.   **Contraindications:**   * 1. Recent wounds, cuts.   2. Scalds.   3. Skin Infections.   4. Acute phlebitis.   **Contrast bath**    Contrast baths involve the effects of repeated fluctuations between hot and cold water. They are used primarily with partial baths. In this form of treatment increased stimulation is achieved. The degree of change can be controlled extremely precisely. It depends on the duration of the bath, the temperatures of the hot and cold waters, and the frequency of the changes of immersions. The general rule is beginning with warm, end with cold.  Eg. contrast foot bath: Hot – 38 – 42 °c, Cold - 20°c.  Duration: Hot – about 3 min, Cold – about 30  Treatment is repeated for several times for 10-to15 min. These may repeated three or four times a day.  **Theraputic effect**   * 1. Increases blood circulation   2. Aid is heating   3. Reduces inflammation   4. Improves range of motion   5. Metabolites are removed   **Whirlpool bath**  The whirlpool bath has become increasingly valuable means of athletic treatment. It has become extremely popular in the United States. The principle is to combine the thermal stimuli. One way in which this occurs is with the aid of a rotatating propeller, which moves the water. In addition, a jet of warm air is injected into the water through a small nozzle. Depending on the size, the whirlpool bath, can be used either as a full bath for the entire body.  Whirlpool baths are primarily after injuries and for patients with circulatory problems and rheumatic disabilities, including rheumatic muscle and joint disorder, as well as for relaxing after practice and complete  **steam bath**  Today, it has indeed become mandatory for every individual whether man or woman to work hard to earn their bread and butter and to survive in this fast paced competitive world. But, as goes the saying, “All work and no play makes Jack a dull boy”, it is essential to keep rejuvenating yourself now and then to energize yourself to perform better.  Image result for steambath  Busy schedules and **[stressful lifestyle](http://www.inlifehealthcare.com/blog/causes-management-of-stress/" \t "_blank)** calls for the demand of various relaxation techniques such as laughing clubs, meditation centers, massage centers, salons, spas, etc. But, what about a steam bath? Have you ever given a thought to it? If you are a member of any health club or gym, then you might be just in luck. This is because almost every health club has this facility that is accessible to all its members. So, then what are you waiting for? Go on, use the facility, relax and rejuvenate yourself and take advantages of steam bath.  This bath has gained a lot of popularity lately, not only among the ladies but also the men as they have access to it in fitness centers, sports clubs, gyms, salons and spas, etc. But, it isn’t a new form of relaxation. It has been in practice since ages, especially popular among ancient Romans. They used to enjoy its benefits through natural hot water springs. As everything has its advantages and disadvantages, so does steam bath. So let’s get to steer clear the steam cloud and check out the pros and cons of it. Steam Bath Benefits  1. The most common benefit of steam bath is relaxation. It gives a soothing effect to your body and mind, thereby reducing stress levels and tension. 2. It also provides your muscle the best form of relief especially near the joints. When joints and muscles are relaxed, you have fewer chances of encountering conditions like **[arthritis](http://www.inlifehealthcare.com/blog/symptoms-of-rheumatoid-arthritis/" \t "_blank)** and other joint pains. 3. You surely must have experienced sweating while taking this bath. The cumulative effect of sweating results in 30% reduction of toxins in your body. It is an effortless and a practical way to detox, and with a greater degree of effectiveness. Not even **[detoxifying foods](http://www.inlifehealthcare.com/blog/10-natural-detoxifying-foods-for-your-body/" \t "_blank)**can rival the benefit of this bath in this regard. 4. This increases the temperature of your body temporarily. This phenomenon is known as hyperthermia. 5. In a controlled setting, this favors you by killing harmful micro-organisms that might have invaded your body when you go out or perform routine activities. If not killed, organisms will at least be weakened, making them available to your immune system to fight them. Thus, it helps your immunity. 6. This regulates and stimulates the flow of blood and boosts your metabolism. Thus, it also aids in steam bath **[weight loss](http://www.inlifehealthcare.com/blog/a-powerful-weapon-in-your-battle-against-overweight-and-obesity/" \t "_blank)**. 7. It helps you generate heat from your body. This in turn increases the blood circulation to your skin and thereby helps in skin nourishment. 8. The heat thus also generated  helps you to get rid of the **[fat deposited under the skin](http://www.inlifehealthcare.com/blog/6-best-ways-fight-cellulite-naturally/" \t "_blank)**. For people with oily skin, it is an added benefit, because it reduces the chances of developing acne that is caused due to fat in the sebaceous glands. 9. Steam bath benefits for skin**:**Post having this bath; your skin looks significantly radiant and healthier. The skin gets sufficiently hydrated which improves its elasticity and gives a youthful look. Detoxification also helps in making your skin glow.   All good uses of steam bath bring along with them certain undesirable aspects too. Similarly, there are certain disadvantages of the bath too. Lets check out on them. Disadvantages of Steam Bath  1. If the water is too hard, certain impurities, such as chlorine, and other chemicals if any, may be absorbed by your skin that may not be healthy to your body. 2. Improper installation and portable steam bath may sometimes cause headache to the user. 3. The heat emitted from the steam room may not be suitable for those who have **[asthma](http://www.inlifehealthcare.com/blog/7-natural-remedies-for-asthma/" \t "_blank)** and **[heart problems](http://www.inlifehealthcare.com/blog/co-enzyme-q-10-may-reduce-the-heart-failure-by-half/" \t "_blank)**. 4. Installing this is a little expensive affair.   **Sauna bath**  A **sauna** is a small room or building designed as a place to experience dry or wet heat sessions, or an establishment with one or more of these facilities. The steam and high heat make the bathers perspire. Saunas can be divided into two basic types: conventional saunas that warm the air or [infrared saunas](https://en.wikipedia.org/wiki/Infrared_sauna" \o "Infrared sauna) that warm objects. Infrared saunas may use a variety of materials in their heating area such as charcoal, active carbon fibers, and other materials. How to use a sauna 1.   In general, you need 2 hours time, 2 large towels (1 to dry yourself, 1 to lie down on), bathing shoes and soap.  2.   Always take a shower before using the sauna - for hygienic reasons and to remove the greasy film on your skin, which delays the sweating process.  3.   You have to be dry when going into the sauna (wet skin prevents sweating).  4.   It’s recommended to prepare yourself for the heat with a warming foot bath (3-5 minutes).  5.   Please be quiet inside the sauna.  6.   Please always sit or lie on a large enough towel (so that there is enough room for your feet). Good to know: warmth rises, therefore it’s hotter on the upper benches. The higher you sit in the sauna, the hotter is the air. Beginners should sit down on the lower or middle benches.  7.   In case you lie down in the sauna, you should sit up straight for the last 2 minutes and play with your legs to enhance your blood circulation so that the blood doesn’t drop down in the lower body and cause vertigo.  8.   Don’t force yourself to stay. As soon as you feel unwell, leave the sauna immediately. Your health is always the most important thing. A sauna bath takes between 8 and 12 minutes, 15 minutes maximum. After that time you should leave the sauna.  9.   At fixed times in certain saunas, our sauna-master pours different essential oils onto the sauna oven, which then evaporate into the atmosphere. You should “pre-sweat” in the sauna for app. 5-10 minutes before that event, experience it for app. 4-5 minutes as a real highlight and wait afterwards for app. 1-2 minutes before leaving the sauna. Don’t enter the sauna during that session.  10.   After the sauna, go into the fresh air for app. 2 minutes to fill up on oxygen and to cool your lungs.  11.   Always take a shower after a sauna round and before using the cold water bath.  12.   To achieve an effect for your health, the cooling process through fresh air and cold water should be strong enough.  13.   After cooling down, it would be good to take a warming foot bath. At the same time, the rest of the warmth inside the body is dissipated and therefore causes the body to cool down. Additionally, this prevents a cold. A warming foot bath in ankle-high water keeps the body from sweating afterwards.  14.   You can use the different relaxing areas for a rest.  15.   Altogether, you should not take more than 3 sauna baths. Hot Fomentations. Water (Aqua) Treatment As cold water may be usefully applied in local compresses, hot water is often of the greatest service applied in fomentation, i.e., when a thickly folded flannel, or any thick absorbent substance, such as spongio-piline, is completely wrung out of hot water, and placed on the affected part, covered with dry flannels, oil-silk, or mackintosh outside, to prevent evaporation and retain heat, and changed again frequently, the process being continued for half an hour, or even for several hours if necessary. This stimulates the external skin much more strongly and suddenly than any cold compress, for every degree above the normal skin-temperature is felt much more acutely than every degree below it (Gully), and it acts much better than the more equable heat given by hot salt, hot bran, or tins, or caoutchouc bags of hot water, because the high temperature is more constantly renewed.  If there be congestion, or even inflammation of an internal organ, it may be relieved by such external application which is especially indicated when the patient is too feeble to react to cold, or when the pain and irritation are very severe, and "of the mingled [nervous](http://chestofbooks.com/health/materia-medica-drugs/Materia-Medica-Therapeutics-Inorganic-Substances/Nervous-And-Muscular-Systems-Antimony-Antimonium-Stibium.html) and inflammatory kind, with, if anything, an excess of the former." The direct application of quite hot water causes contraction of small vessels and also of the uterus.  **BRIEF HISTORY OF MASSAGE**  The art of massage was used in the prehistoric times for their curative effects. The Chinese used such methods of curing as early as 3000 B.C. There is also record of such use by Hindus from the earliest times. Even the Japanese, Greeks, Egyptians, Turks and Romans were familiar with such benefits derived from massage and active movements. Among Greeks massage was much used both as curative agent and as luxury after bath. While considerable importance was given to exercises in building up the physique for which Greeks were famed. Physicians, four or five hundred years B.C. recommended treatment by rubbing for chronic joint pains, paralyzed limbs, neurological, Headache and various other elements.  About 2000 years ago Scandinavians and Germans worked out the theories scientifically and it is now known and acknowledged as the scientific manipulation of the soft tissues of the body. In 1860 it was definitely revived and put on a scientific basis by Dr. Metzger of aster Dom. Massage is probably derived from a Greek word meaning ‘to knead’ and from an Arabic word ‘to press softly’. French word ‘masser’ means ‘to rub’.  Massage performed by the hands in a scientific way is useful in the treatment of numerous abnormal conditions. Exercises consist of the regular performance of movements for their curative value. Primarily they affect the organs concerned i.e. joints muscles and nervous system but through these, they influence the whole body. In many cases of diseases and injuries they are the most valuable means of rehabilitation and restoration of functions.  **Principles of Massage**  A masseur should have patience and courtesy and have a sense of caring for the patient’s welfare. HIs hands should be clean, warm, dry and soft. The nails should be short and smooth. He should wash the hands before and after the treatment. Good positioning and posture will prevent fatigue and back ache.  A firm, adjustable table, easily accessible from both sides is most desirable. Only the part to be massaged should be uncovered. Lubricant should be used to overcome friction. If the patient’s skin is oily, t may be desirable to wash the skin first. Oils used are olive oil, mineral oil, coconut oil etc.  Warm cream or analgesic creams should not be used. Lubricants should not be used for friction movements.  Patient should be in a relaxed and comfortable position. Lying down is the best comfortable position in the prone position pillow should be placed under abdomen. In the supine position pillow should be placed under head and the knees.  **Important considerations while giving massage**   1. Proper pressure regulation. The pressure should be delivered from body, through soft parts of the hands; it is adjusted to contours of the patient’s body parts. 2. Should be rhythmic 3. It should be painless (never painful) 4. Direction of the force should be in the direction of muscle fibers 5. Massage should begin and end with effleurage 6. Part should be evaluated if necessary 7. The pressure should be in line with venous flow   **Physiological effects of massage**  The effects of massage have been described and classified in several different ways. These effects might be classified as physical, physiological and psychological.   1. **Effect of Massage on Skin:**    1. Massage increases the temperature of skin by 2°c to 3°c.    2. Massage produces a direct effect on the superficial layers of the epidermis.    3. With the improved circulation, the openings of the sebaceous and sweat glands directly improve the functions of these glands.    4. Women show higher increase in temperature of skin than men.    5. Massage open the pores of the skin and skin becomes soft 2. **Effects of the Massage on Circulation of Blood:**    1. Massage assists arterial circulation    2. The rate of heart beat or the stroke volume also increases    3. All the smaller vessels to become visible because of the blood flow created through them    4. Massage increases the circulation of blood    5. More capillaries are open with an increased rate of blood flow    6. Massage increases nutrition of the tissues and remove the product of fatigue    7. Deep massage increases the blood flow and systolic stroke volume    8. The heart rate also increases    9. The red blood cells count increases after massage    10. Abdominal massage increases the hemoglobin and red cells of the circulating blood    11. Massage increases oxygen capacity of the blood      1. **Effects of Massage on Nervous System:**    1. Massage produces little changes in the nerve itself    2. It relieves certain types of pains    3. Massage effects the central nervous system and also the sensory nerves    4. Massage effects the reflex control of circulation      1. **Effects of Massage on Muscles;**    1. Massage produces an actual increase in the size of the muscles structure    2. The muscles becomes firmer and more elastic    3. The muscles are strengthened and grow by massage    4. Massage improves the nutrition of the muscles and promotes their development    5. Massage helps the muscles to perform more exercises    6. Massage make the muscles stronger    7. Massage causes relaxation of the muscles    8. Massage increases the muscle tone   **Contraindications of massage**  **Do not massage when there is an indication of:**   1. A person suffering from any disease of bones, muscles, skin 2. A person effected by virus 3. A person having unhealed fracture 4. A person having unhealed acutely ruptured muscles 5. A person suffering from bacterial, acutely inflammatory, or severe localized arthritis 6. A person in pain due to infection 7. Hemorrhage 8. A person having feeling of vomiting 9. A person suffering from acute pain in abdomen 10. A person with unstable cardiac conditions       **Classification of massage manipulations:**  1) Stroking Effleurage  Stroking  2) Pressure Kneading Squeezing  Stationary  Circular  Ironing  Petrisage Picking up  Wringing  Rolling    Friction Transverse  Circular  3) Percussion Tapatoment Hacking  Clapping  Beating  Pounding  4) Shaking Vibration  Shaking  Many cultures and countries knew the art of massage. It is the mechanical stimulation of the tissues by means of rhythmically applied pressure and stretching.  **Effleurage:** It is the light gliding movement over the skin. The movement should begin the peripheral areas and moves towards the heart.  Sioux-city-massage-300x300Deep-Tissue-Massage  It serves to distribute the lubricant. It helps in reaching areas of muscle spasm, trigger points and pressure points. Strokes should be performed with a light pressure coming from the flat of the hand with fingers slightly bent and thumbs spread. Movement of the stroke should be toward heart and contact should be maintained with the patient at all times.  **Stroking**  1027730_origimage_trigger-point  It is also a form effleuragewith more pressure. It produces both mechanicaland reflex effects. Stroking should be used between other techniques. Stroking decreases the defense against harder massage techniques and has a soothing effect.  **Kneading**  Kneading manipulations are classified as Squeezing, Stationary, Circular and Ironing.  **Squeezing:** The muscles are gently squeezed, lifted and relaxed. One or both hands are used covering the whole surface. The hands remain stationary if the limb is painful or travel slowly and carefully along the limb.  shoulder-massage  **Stationary:** The hand placed on the part and exert pressure, without travelling along the limb. The pressure is generally increased until the depth is reached.  **Circular:** Performed with one or both hands working alternately along the length of the limb. Soft tissues are pressed against the limb. Pressure on the bony prominences should be avoided. Pressure should be deep and muscles should be moved on the bones.  **Ironing:** This type of kneading is done mainly on the back and gluteus muscles. One hand reinforces over the other. It is similar to circular kneading. Body weight is used to get the maximum depth.  Back+Massage+Techniques_Stress+Relief+Massage_Types+of+Massage+Strokes  **Ironing**  **Petrissage**  It consists of kneading manipulations that press and roll the muscles under the fingers or hands. The muscles are squeezed and lifted. The purpose is to increase venous and lymphatic return and eliminate waste products from the areas. It can also break up adhesions between skin and subcutaneous tissues. Larger muscle is with both the hands. When kneading, the hand should move from the distal to the proximal point of the muscle insertion. Picking up, wringing, and rolling are the types included in this category.  **Picking up:** It can be performed with one or both hands. The action is smooth, continuous and rhythmic from one attachment to the other of the muscle. Muscle and muscle groups should be completely relaxed. Care should be taken to avoid pinching.  35b35454ca8ea12158529ca7f767e83c  **Picking up**  **Wringing:** Soft structures are lifted away from the bones and moved alternately from one side to other.  **Rolling:** Tissues are pressed against and rolled on same underlying hard substance. Thumbs are placed and the tissues are rolled against by the other fingers.  **Friction**  friction  The friction massage loosens adherent fibrous tissue (scar), helps in absorption of local edema and reduces local muscle spasm. The superficial tissues are moved over underlying tissues (structures) by keeping the hand or fingers in firm contact with the skin. Transverse friction and circular friction are the two types in this category.  **Percussion or tapotment**  They are series of brisk blows, administered with relaxed hands and following each other in rapid alternating movements. It stimulates subcutaneous structure. It increases circulation and stimulates peripheral nerve endings to convey stronger impulses. The variations in this technique are Hacking, Clapping, Slapping, Beating and Pounding.  Types  **Hacking:** alternate striking with ulna border of the hand.  hacking-2Jacking-Hand-Position1-1024x678  **Slapping:** alternate slapping with fingers  414989_630x354  **Clapping:** Movement of alternate flexion and extension of the wrist joints, hands with a cup shape, lifted and dropped on the body part.  **Beating:** Beating is a massage therapy technique in which the therapist gently beats on the patient's skin with the bottom of each fist alternately.  1249443123_Priemy_massazha_7  **Pounding:** Fingers constantly touching the body part, this technique is done alternately with the heal of the hand with flexion and extension of the wrist joint.  Massage-Close-Up-Hands-Shoulder-300x300  **Vibration:** Vibration is a fine tremulous movement made by the hands or fingers placed firmly against a part; this causes the part to vibrate. The hands should remain in contact with the patient and a rhythmical trembling movement will come from the whole forearm, through the elbow.  **Indications:** Muscle, joint and tendon conditions, adhesions, muscle spasm, tendonitis and back strain, after strenuous training program.  **Contraindications:** Arteriosclerosis, thrombosis or embolism, various veins, acute phlebitis, cellulites, abscesses, cancer, acute inflammatory conditions of joints, skin and soft tissues.  **Shaking:** This technique is done with perfectly relaxed hands. In case of lower limb shaking, catch hold of the foot and shake with longitudinal traction moving the limb upward and downward.  **Unit-4 Therapeutic Exercise** |
|  | Definition, Principles and Importance of Therapeutic Exercises. Classification of Therapeutic exercise: Passive Movements (Relaxed, Forced and passive stretching). Active movements (concentric, Eccentric and static). Free Mobility Exercise for Shoulder, Wrist, Fingers, Hip, Ankle, Foot joints and Neck exercises. |